## Posture, sport and performance

# The techniques of global non-compensated muscular stretching as a powerful mean of posture rebalance

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"Movement is life" used to say in the nineteenth century Still, the father of Osteopathy. One hundred years later, Tissot added: "Movement often can substitute medicine, but no medicine could ever substitute movement."

Kinesiology, the science of human movement, follows these principles. It works helping in preventing, maintaining, and restoring a good health and an optimal organic functionality. In all these fields the concept of posture plays an important role. A balanced posture is beneficial both for athletes and for teenagers getting to know a new technical gesture, or for those who go to the gym and pay attention to their health. Many authors agree in saying that unbalanced postures, in which joints do not respect their physiological planes and axis, will inevitably undergo energy wasting, frictions, anomalous tensions that will lead to inflammations and various pathologies, such as capsulitis, bursitis, tendinitis, dislocations, cartilage degeneration, arthrosis, etc.

### Correct posture and altered posture

The term correct posture refers to a body able to manage its balance and its relations in the cheapest and most profitable possible way, without pain. In other words, when biomechanics of musculo-skeletal parameters (joints in axis, aligned body, correct musculo-articular parameters, etc.) adequately answers to gravity, i.e. it carries out ordinary life gestures without pain and doing the minimum effort and getting the maximum result, it is possible to say to have a correct posture, adequate to one's constitution and structure.

It is easy at this point to say what an altered posture is and it is possible to do that using an example. Imagine a person who underwent a sprain of the tibiotarsal joint: not to feel the pain, or at least to reduce it, he/she will try not to load the weight on that foot, though remaining efficient, by using adaptive mechanisms, such as limping, keeping the pelvis slightly raised or rotated towards the painful foot, using the shoulders to help the walking through a synergic movement. The body will therefore adopt a compensative and adaptive scheme. The permanence in this condition over the time will determine a "fixity" (for a law of body economy) that will involve the whole muscle. The connective tissue, together with the fascial tissue, will therefore tend to fix the "new" length of the muscle.

**Improve the physical condition**

What can people who graduated in Sport Science do and which competence must they have to improve people's physical condition, especially athletes' one, in order to get better results? Nowadays, people who graduated in Sport Science need to know how to do an adequate postural examination, both static and dynamic; in addition, they need to be able to collect the data justifying or having caused the postural alterations that came out during the analysis and the functional tests.

Before starting with any gym work (strengthening, toning up, sport training, etc.), it is fundamental to do a postural evaluation in order to avoid strengthening together with the muscles also problems and postural alterations.

**Shape and function**

Shape and function are two elements depending on each other: function depends on structure and structure, in turn, is influenced by function.

There cannot be a good posture and so a good performance in presence of pathologies and disharmony at the expense of the skeletal and muscular system. An altered posture inevitably causes altered functions which in turn will provoke other postural alterations, limiting or invalidating the performance.

Interpreting these inconsistencies, improve posture, give back to the athletes correct proprioceptive information, means reducing and eliminating the muscular brakes and so the limits of the athletes themselves, allowing them to express their abilities at their best.

Talking of that, Bousquet globally interpreted the issue by saying: "Each joint has its own physiological movement extent depending on a good articular relation and the balance of the muscular tensions applied. Changing one of these elements means to change the joint statics and its freedom to move. The muscular chains explain the possibility of recidivist lesions. They explain the solicitation of specific areas in the functional scheme. They allow following the insidious development of deformations…"

The role of the muscular chains, i.e. this system of interconnected muscles acting as they were one, is visible during stretching sessions, when the body automatically tends to escape the tensions that come up (*compensations*) by modifying tensions in other parts of the body.

An example is given by the classical stretching exercise for posterior thigh muscles: the lumbar region is in introversion and the cervical region is in hyperlordosis. Just keeping the physiological curvatures much stronger tensions would come up, probably also in different areas of the body, but useful to stretch muscular tracts that would never accept to be stretched otherwise, escaping from the tension given by the stretching, which sometimes can become unbearable. It would be even better to reduce or eliminate the curves during a non-compensated muscular stretching. Of course, this would be done only for a strategical and therapeutic aim when a posture needs to be modified. The body, as a matter of fact, in order to avoid tensions caused by the stretching, will tend to increase the curves and the articular compressions, exacerbating the already existing problems, just not to feel pain. This is the reason why using global non-compensated muscular stretching.

**Global non-compensated muscular stretching**

Our method is founded on the balance of the tensions in the muscular, fascial, and connective chains, which are responsible for the alterations in vertebral column curvatures, and guarantees skeletal, muscular and articular benefits. Working with specific postures, assumed for a specific time together with breathing techniques to support posture changes, it is possible to intervene on muscular, fascial and connective chains at the same time and to free the joints blocked by tense and short muscles. Pancafit® is an innovative tool through which it is possible to balance posture by acting on all muscular chains. It works with the force of gravity and a series of exercises. Through global non-compensated muscular stretching – Raggi Method® it is possible to restore muscle and also joint elasticity, as broadly confirmed by academic evidence. This allows the right alignment of the general posture and, as a consequence, it gives the body more functionality, elasticity, balance and fluency in sports and in common gestures.

Learning this method allows discovering that the body is an immense receptor system and that each receptor which underwent traumas will constitute an irritative thorn. Each of these thorns will inevitably act on the tonic postural system, and so, on the tone of some muscular groups or chains in order to defend the whole system or to reduce the disturbance.

**Stretching methods compared**

The aim of this research is to prove that a correct posture can positively influence the performance, too. In particular, two different methods of stretching have been compared in order to understand which one could be more useful to complete a traditional training to improve sport results.

The two methods taken into consideration are the Raggi Method® (global non-compensated muscular stretching) and the Anderson Method (classical analytic stretching).

The group taking part in this research is made of ten athletes: six men and four women aged between 18 and 22 years old practicing long jump. Half of the group experienced the Raggi Method®, whereas the remaining five persons did some exercises taken from the Anderson method.

In order to evaluate the improvement of their performance, the athletes were asked to do some evaluating tests before, during, and after each stretching session (see Chart 1).

The anterior bending test was done during every singular session and also between every two sessions to calculate the improvement of the flexibility.

| Chart 1 – **Evaluation tests** (executed before and after the twelve sessions) |
|---|
| Mid-line test |
| stabilometric and baropodometric platform |
| Bosco test:<br>Squat jump (SJ), Counter movement jump (CMJ), Counter movement jump with free arms (CMJI) |
| Tests on the field:<br>standing long jump, consecutive right and left triple jump, consecutive right and left quintuple jump) |

**Working procedure**

The work lasted six weeks, during which the Raggi Method® was used twice a week, whereas the analytic stretching three times a week, both in sessions of 30 minutes. The two types of stretching were added to the athletes' usual training.

The work with global non-compensated muscular stretching was focused on the treatment of diaphragm and on the rebalance of the tensions in the posterior chain, with a particular attention to the muscles of the tibiotarsal and of the coxofemoral joint. Exercises for the rebalance of the tensions of the transverse muscular chain were also done preventing it to become a source of compensation.

For all the exercises and postures the athletes used the specific tool of the Raggi Method®, Pancafit®. The therapist decided the measure of the working angles and their combination based on gravity force and on each athlete's individual characteristics (flexibility, type of posture, pain, etc.) in order to define the most suitable kind of work for everybody. The sessions executed following the classical Anderson

Method included 44 different exercises involving different areas of the body and divided into three groups that the participants had to repeat alternatively for four times. The exercises have been all carried out following the instructor of their inventor: gradually putting in tension the interested district and keeping the position for 15-30 seconds without creating pain and progressively returning to the starting position.

**Results**

Despite the small number of participants, all the tests reached statistically relevant results. The group of people working with the global non-compensated muscular stretching of the Raggi Method® obtained a more significant improvement compared to the group working with the Anderson Method of analytic stretching. Another important result was that those who had used the Raggi Method® showed a notable improvement in their muscular balance and as a matter of fact the weight distribution between right and left foot resulted more balanced (see figure 1).

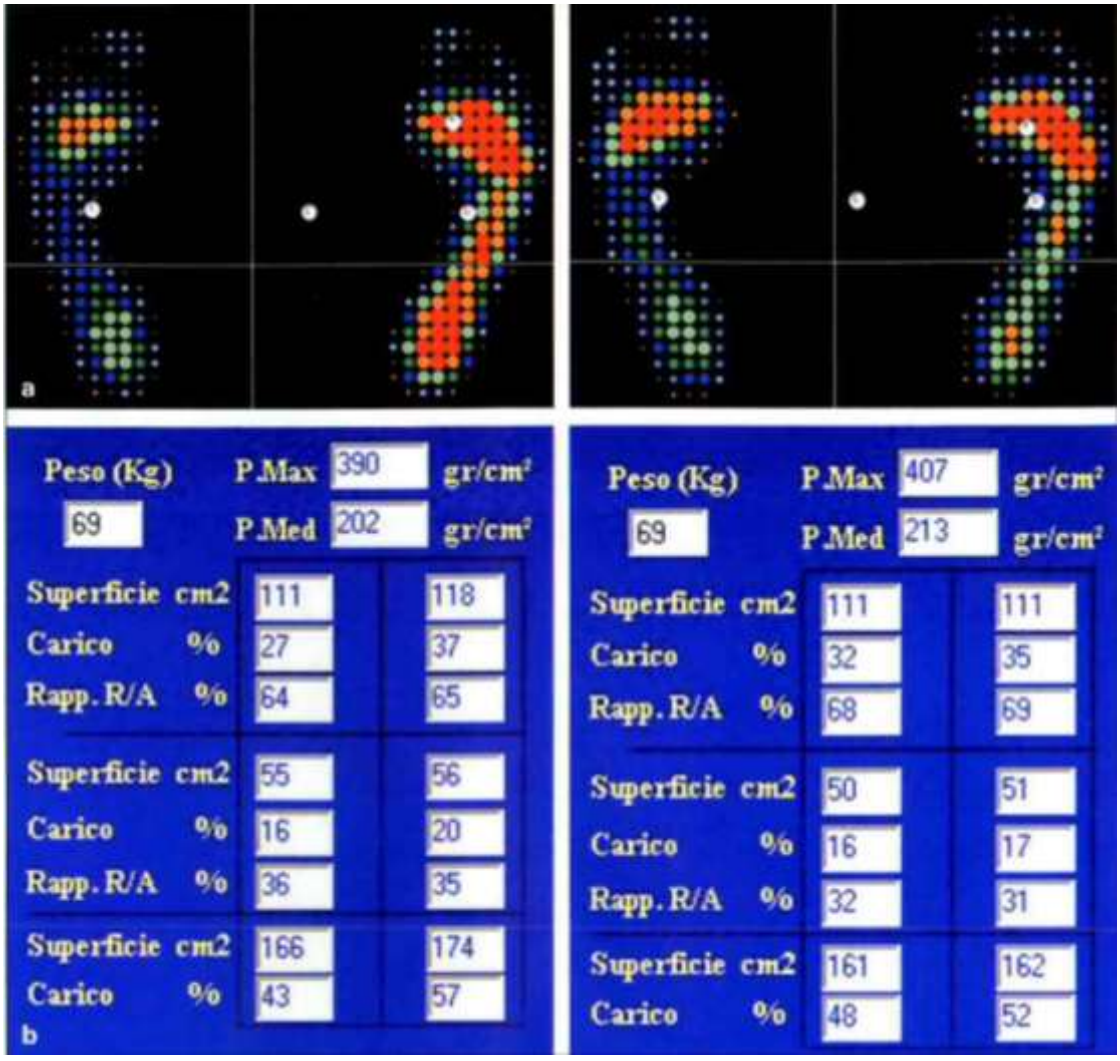

Figure 1 The average of the results obtained using the stabilometric platform on athletes who executed the six sessions with the Raggi Method® shows a better balance of the loads and of the surfaces between the two feet. Observing the most loaded points in red it is easy to see a more equal distribution compared to the starting condition, especially in the right foot.

The baropodometric evaluation showed that the pressure centers tended to go back to an aligned position and there was also a balance perception improvement in the static evaluation carried out with eyes opened and closed (see figure 2).

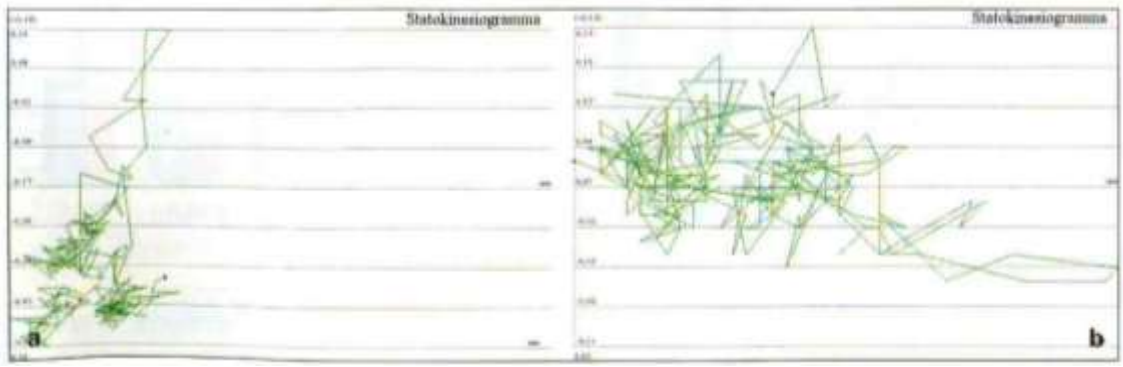


Figure 2 The analysis of the oscillations of the standing on both feet shows that after six sessions of the Raggi Method® the oscillations have a smaller movement range. Starting values: 0,16; -0.51. Ending values: 0,13; -0,07. They are therefore closer to the ideal oscillation position (value 0,0).

The athletes who worked with the Anderson Method of analytic stretching maintained their asymmetry (some had very little improvement but in others it worsened – See figure 4).

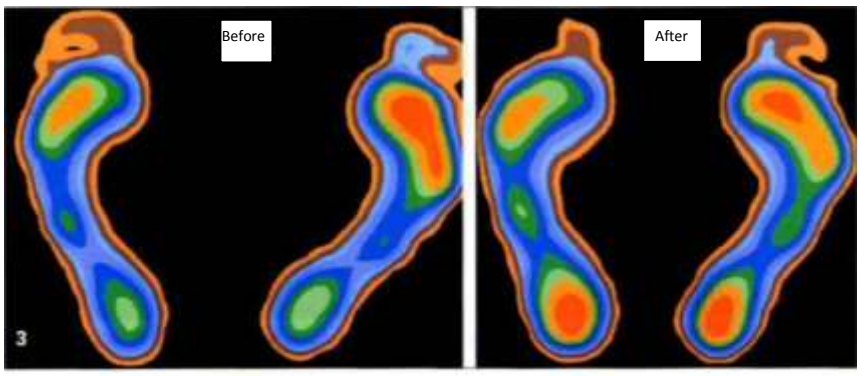


Figure 3
After the sessions of the Raggi Method® the balance of the loads and of the leaning surface improved.

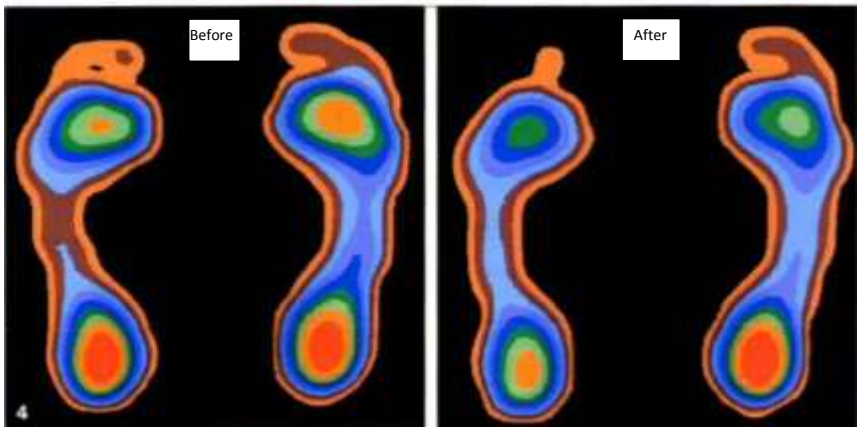


Figure 4
After the sessions of the Anderson Method the leaning surface of the left foot and the loads in the anterior part of the feet diminished. The initial overload in both heels just moved toward the right heel.

The tests carried out on the field, i.e. different kind of jumps, showed much better results in the athletes using the Raggi Method®. Some values resulted doubled compared to those of the other group (see figure 5). Also the Bosco tests showed improved or even doubled results among those of the Raggi Method® compared to the others (figure 6 and chart 2).

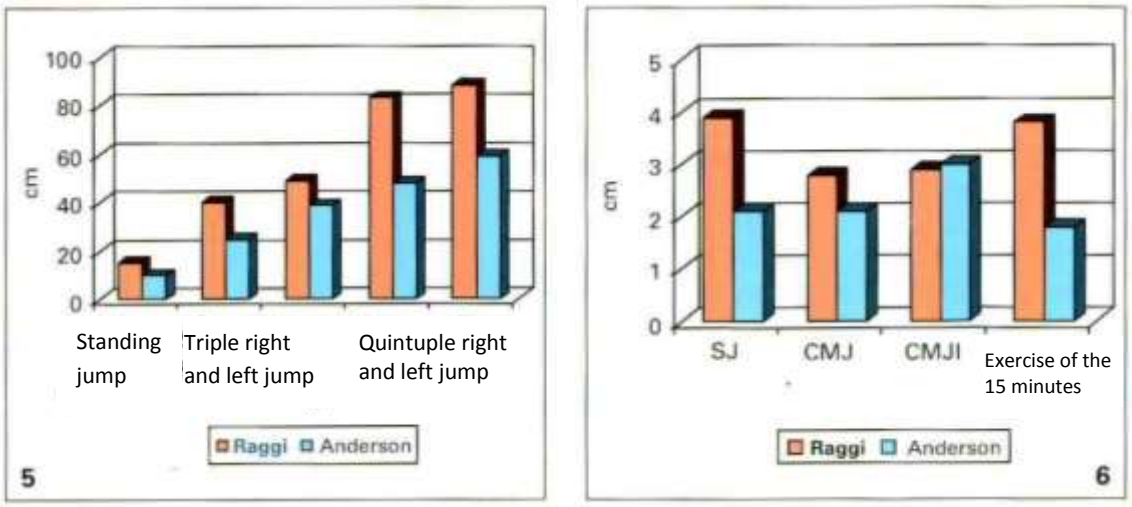


Figure 5 – 6 The graphics show a comparison between the improvement reached with the Raggi Method® and the ones reached with the Anderson Method in the different tests. The improvement obtained with the Raggi Method is considerably larger than the improvement reached with the Anderson Method.

Chart 2 **Bosco Test: average improvement obtained**

| | Metodo Raggi® | | | Metodo Anderson | | | Differenze | |
|---|---|---|---|---|---|---|---|---|
| | Soggetti (n.) | Max | | Soggetti (n.) | Max | | Metodo | |
| | | prima | dopo | | prima | dopo | Raggi® | Anderson |
| SJ | 5 | 35,64 | 39,8 | 5 | 36,54 | 39,1 | 4,16 cm | 2,56 cm |
| CMJ | 5 | 37,18 | 40,06 | 5 | 39,72 | 41,88 | 2,88 cm | 2,26 cm |
| CMJI | 5 | 43,6 | 46,72 | 5 | 46,5 | 49,94 | 3,12 cm | 3,44 cm |
| 15" | 5 | 22,67 | 26,47 | 5 | 24,49 | 26,24 | 3,79 watt | 1,75 watt |

**Max=maximum value reached before and after the work*

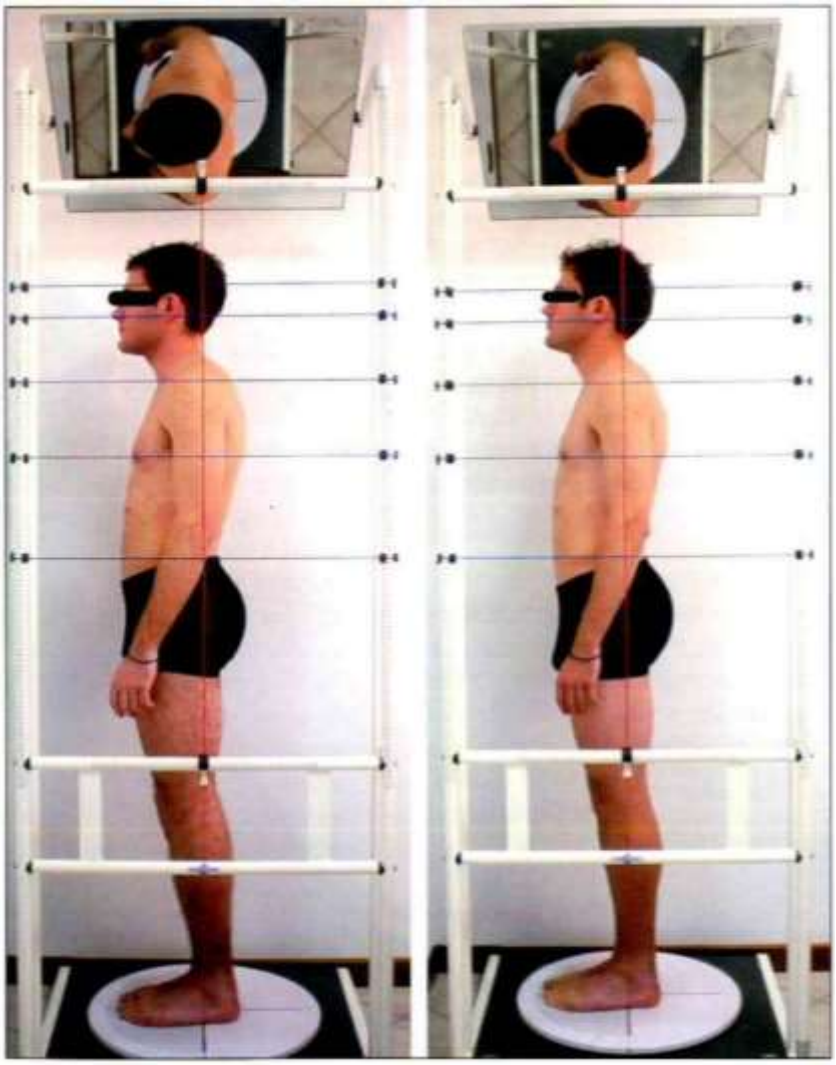

Figure 7
From the pictures taken at the scoliosometer before and after the sessions with the Raggi Method®, the alignment of the different body districts result improved. The subject results to be more aligned with respect to the reference vertical line (red line).

**Conclusions**

The results of this research show that posture is extremely important, both for common people and athletes (see figure 7). Apart from reducing the pain, reaching a better postural condition can translate into better functionality and better performance. Through an adequate formation, also graduates in Sport Science can become promoters and protagonists of this culture and knowledge.

**Examples of global non-compensated stretching exercises**

*Postural exercise*

This exercise of global non-compensated muscular stretching is as intense as efficient. It is used on athletes in order to improve their performance and their motor skills. The real peculiarity of this exercise is that it is possible to act on different parameters to change both the area on which we are working and the work intensity. From the opening or closure of the tibiotarsal angle (changing the upper side of Pancafit®), it is possible to modify the tension of the whole posterior muscular chain, and also the tension of the opening and closure of the lower limbs and the crossed tensions (according to Bousquet's parameters). Also moving forward or backward the position of hands and glutei important modifications are reached in the different rings forming the chains, always respecting the principles of global acting. Using the stick kept in contact with the patients' back from the occipital bone to the sacrum is another parameter to look at in order to avoid compensations and to obtain the maximum benefit. This exercise is particularly useful for those who want to gain great mobility, strengthening, and dynamism of the lower limbs by loosening the muscular breaks. These postures have to be kept for at least 90 seconds each. The management of the work intensity is related to many technical factors and to the availability of the athletes.

*Exercise for the feet*

It is not possible to think of improving and strengthening an athlete if you do not improve his/her proprioceptive and neuromuscular interdependence qualities first. The great quality of this work is that the tension in the posterior chain, representing the pillar of all the muscular chains, can be managed and graduated in terms of stretching intensity thanks to the working posture. These exercises can vary in movements (plantar and dorsal flexion, adduction and

abduction, circumduction), speed and difficulty level (using or avoiding to use the synergistic muscles of fingers and thigh), creating in this way a high level of interdependence among the different muscular districts. The breathing must be always under control and active. What you feel after doing this exercise is a better perception of the limb, a better contact and relation with the ground, an improved ability to do technical gestures or movements with greater precision.

*For more information on the Raggi Method®- Pancafit® please address to*
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